and penetrating root system of Titan F_1 hybrid rootstocks permit them to grow well with less water than does peach. This has particular significance to localities with limited irrigation, and particularly to the sandy soils of the San Joaquin Valley.

In summary, the rootstock from Titan derives its value from its vigor, its uniformity, its compatibility with peach and almond tops, and a more desirable configuration for budding than those from other almond selections tested (Fig. 2). Also, it is the one selection that produces sufficient hybrids to make it commercially feasible. It can reduce production costs for both almond and peach under the stated conditions, and generally increases production in some areas where economic production with peach rooted trees has been difficult to achieve.

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Variation in Germinability of Pear Seeds*

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European pomologists have shown recent interest in obtaining rootstock lines of common pear as replacements for quince, Angers A, B and C. This has brought attention to the production of pear stocks from seed. Long-abandoned farmlands recently acquired by the University of Guelph were found to contain a fairly dense stand of young and mature wild seedlings of common pear *(Pyrus communis* L.). It seems reasonable to assume, from the presence of a few very old mother trees, that the community has emerged as progeny of French pear rootstocks such as were commonly used in Ontario nurseries of a century or more ago.

Considerable variability was evident in tree and fruit form and size but all bearing trees had fruit that was acid and astringent and all but a few were round or oblate rather than pyriform. In effect, the fruit resembles that grown in France and England for "perry" (pear cider) production. Three trees were selected for an initial examination of the germination performance of their seeds, and it is this trial with which this report is concerned.

Unstratified seeds of common pear show a germination capacity of about 1%, but seeds stratified for 60 to 90 days show a germination range of 41 to 98% (1). Other work has demonstrated that deeply dormant seed of temperate zone woody plants respond best to stratification within the 0 to 7°C range and that a rise to 8 or 10°C will stall the rest-breaking process. A reversion (to secondary dormancy) may occur if the temperature is raised to 14°C for an appreciable time, hence the 8 to 10°C range is the compensation point of dormancy (2).

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A bulked lot of the pear seeds was subjected to quick viability (triphenyltetrazolium chloride) test, in which staining of excised embryos indicated a germination potential of 84%; and water extracts of finely ground whole seeds inhibited germination of tomato seeds for 5 days beyond the time of complete germination of seeds treated with distilled water (3). In our trial, the seed from the three selected trees was subjected to varying stratification temperatures, and germination was recorded at weekly intervals.

Duplicate seed lots from each selection (A, B and C) were separated from their fruit in mid-October, 1970, and stratified in both polyethylene bags and in moist sand-peat mix 1:2 by volume. One such lot of each pair was held at 5°C, the other at 22°C. On October 21, and weekly thereafter for 8 weeks, 20 seeds from each lot

Table 1. Seed germination of common pear. Data are as % one week at 22°C after varying stratification periods.

5°C Stratification period (weeks)[1]	Common pear selection A	B	C
0° (control)	0	0	0
1	0	0	5
2	0	5	15
3	5	10	0
4	10	5	0
5	20	15	5
7	10	35	50
8	0	65	30

[1]Because of a limited seed supply germination tests were not carried out on seeds stratified for 6 weeks.

(stratified and control) were placed on moist paper in petri dishes in three growth chambers, held at day/night temperature ranges of No. 1, 10-8°C; No. 2, 15-10°C; No. 3, 22-12°C.

Initial records showed that mean seed size from any lot of fruit varied inversely with the size of the fruits thmeselves, but this is not considered a significant factor insofar as germinability is concerned.

A marked variation in response to stratification time was noted (Table 1). Of the 320 seeds in germination chambers 1 and 2, only 2 germinated. Both were from Selection B, one after 5 weeks stratification, the other after 7 weeks. The table notes only those recorded for No. 3 chamber. The data suggests several questions: Why was the seeds of Selection C between two and four weeks of stratification slow in germinating? If more seed had been available, would Selection A and C have shown further reduction in germination? One can postulate that Selection B seeds may have continued to improve in their germination performance with increased stratification time; and this is an aspect that requires further testing. Perhaps the most pertinent conclusion is that a temperature close to 22°C is best for inducing germination, but that common pear seedlings vary in their seed germination responses even under carefully controlled germination conditions.

The variability shown here will encourage further testing to determine the duration range for "optimum" stratifiaction, as well as to record the phenotypic variation in the adult trees. Limited seed quantities bulked from the stand of Guelph pear seedlings, are available on request to the newly formed University of Guelph Arboretum.

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